

Q1:(a) True (T) or False (F) and Correct :

- 1- An unrestricted primal variable always corresponds to a dual un-equality constraint. ()
- 2- Addition of a new constraint can improve the objective value. ()

(b) Choose the right answer to complete the statement:

- 1-For a minimization problem feasible solution, the objective value is its dual problem objective value.
a- equal to b- a lower bound on c- an upper bound on
- 2- Changes in objective coefficient of a current basic variable in the optimal Solution , can change z-row coefficients of.....
a- all basic variables. b- all non-basic variables. c- that current basic variable.

Q2: The following tableaus are the starting and 2nd iterations of a maximization LP problem.

- 1-Complete the starting iteration tableau.
- 2-Find the dual of this problem.
- 3- Complete the 2nd iteration tableau.
- 4-Is the 2nd iteration an optimal and feasible solution? Why?
- 5-Find the optimal solution if the following constraint is added to the Problem.

$$5x_1 + 6x_2 - x_3 \leq 3$$

- 6-From the given optimal solution tableau, find the solution of the problem,

$$\text{Max. } z = 3x_1 + 6x_2 + 2x_3 + 4x_4$$

$$\text{S.T. } 3x_1 + 4x_2 + x_3 + x_4 \leq 2 \quad (1)$$

$$x_1 + 3x_2 + 2x_3 + 3x_4 \leq 1 \quad (2)$$

$$x_1, x_2, x_3, x_4 \geq 0$$

Basic	x_1	x_2	x_3	s_1	s_2	Solution
Z	-3	-6	-2	....	....	....
....	3	4	1	....	....	2
....	1	3	2	....	....	1
Z	....	....	....	....	....	....
....	....	....	....	3/5	-4/5	....
....	....	....	....	-1/5	3/5	....